WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device in patterning of a conductive film and a thin dielectric film, comprising the steps of:

a first etching step of carrying out anisotropic etching until most of the conductive film in a flat portion disappears; and

a second etching step of increasing a selective ratio to the dielectric film to etch the conductive film in an unnecessary portion in a state in which the conductive film is caused to remain such that a thickness of the dielectric film provided under the grain boundary can be held to prevent oxidation species from reaching an interface with a substrate after the first etching step.

2. The method of manufacturing a semiconductor device according to claim 1, wherein the second etching step includes a step of carrying out etching while growing a silicon oxide film by a reaction of the oxidation species and the substrate.

3. The method of manufacturing a semiconductor device according to claim 1 or 2, wherein the second etching step is executed in such a gas atmosphere that a concentration of the oxidation species is higher than that in the first etching step.

4. The method of manufacturing a semiconductor device according to claim 1 or 2, wherein the second etching step is executed at an in-chamber pressure of 2 mTorr or less.

5. The method of manufacturing a semiconductor device according to claim 1, wherein the dielectric film is a silicon oxide film having

a thickness of 5 nm or less.

6. The method of manufacturing a semiconductor device according to claim 1 or 2, wherein the conductive film is a silicon type conductive film.

7. The method of manufacturing a semiconductor device according to claim 6, wherein the silicon type conductive film is a polycrystalline silicon film.

8. The method of manufacturing a semiconductor device according to any of claims 1 to 7, wherein the first and second etching steps are ECR plasma etching steps.

9. The method of manufacturing a semiconductor device according to claim 6, wherein the second etching step uses a hydrogen bromide (HBr)/Cl_2/O_2 plasma.

10. The method of manufacturing a semiconductor device according to claim 9, wherein the first etching step uses the hydrogen bromide (HBr)/Cl_2/O_2 plasma, and

a concentration of oxygen in the second etching step is higher than that of oxygen in the first etching step.

11. The method of manufacturing a semiconductor device according to claim 9, wherein the first etching step uses a Cl_2/O_2 plasma.

12. The method of manufacturing a semiconductor device according to claim 1 or 2, wherein the dielectric film is a gate oxide film and the conductive film is a gate electrode.